**The Effective Creation of Social Value in Infrastructure Delivery**

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**Abstract**

The need to create social value during the delivery of infrastructure projects is growing in importance. However, it can be argued that the initial expectations of stakeholders at the outset of projects not being achieved once the project is delivered. At present there is no consistent and widespread methodology for the successful delivery of social value outcomes. The problem therefore exists that despite infrastructure having the potential to play a transformative role in the creation of social value; current outcomes are arguably not as effective as they could be. The aim of this research is to understand how social value is currently created and delivered in gas infrastructure works. Through the use of five case studies of small community-based gas infrastructure projects that are part of a wider nationally significant network, the tensions at the heart of social value delivery are revealed. How the social value agenda moves through project stages is revealed as key to minimising social value barriers and ensuring successful social value delivery. The results serve as important lessons for ensuring infrastructure projects effectively create and deliver desired social value outcomes successfully.

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## 1. Introduction

Since the introduction of The Public Services (Social Value) Act (2012) organisations wishing to secure public sector engineering, infrastructure and construction projects need to demonstrate their Social Value credentials (Watson et al., 2016). The Act places a legal obligation on public sector bodies to consider the Social Value each tenderer offers, and ensure this consideration is given appropriate weighting in the comparison and analysis of returned tenders. However, as there is no widely accepted succinct definition of what the term Social Value relates to, each public sector client, construction and engineering company may differ in their interpretation (Watts et al., 2019). Therefore, the knock-on effect of engineering companies trying to engage with this ambiguous and sometimes obscure concept is that there is no consistency in the approaches and methodologies adopted for delivering Social Value. This is problematic in

engineering, infrastructure, and construction projects as it often results in stakeholder expectations not being achieved (Watts et al. 2016). Such stakeholders can include the client, end user, local community and even the internal project team tasked with Social Value delivery. Therefore, despite the potentially transformative role the engineering industry can have on Social Value delivery, the ultimate outcomes and benefits are not as effective as they could be.

In addition to the legal obligations the Act places on public sector clients, many clients and companies operating in the private sector now fully embrace the requirements of the Social Value Act (2012) with the public sector often seen as leading the way in best practice (Preuss, 2007). A moral argument is also emerging with regards to Social Value engagement by businesses, with Social Value now expected as a standard behaviour of a responsible business. However, despite Social Value behaviours increasingly expected by engineering and infrastructure professionals, such as creating work experience opportunities, focusing on local supply chain spending and increasing employment amongst under employed groups in society, there is a lack of contemporary research focus on the Social Value generated and delivered during the completion of infrastructure and engineering works, especially gas and energy projects. This is an important research gap that needs to be addressed as gas infrastructure projects pose their own unique requirements and challenges to wider construction industry works.

This paper first outlines the main areas of the literature that relate infrastructure and engineering works, and specifically the gas industry, as well as discussing social value and its increasing need to be evidenced for all engineering and infrastructure works. The research methodology and methods employed are then outlined, and how through the use of multiple case studies of small gas and engineering infrastructure projects, this paper seeks to understand how Social Value is currently created and delivered in energy infrastructure works. The findings of this paper are then presented and discussed including how they address a gap in current research regarding the perceptions and interpretations of engineering and infrastructure professionals in how social value can be effectively created and delivered. The findings reveal practical benefits that can be employed by engineering and infrastructure professionals to minimise the barriers

faced in Social Value delivery and maximise the Social Value benefits that can be successfully achieved.

## 2. Literature Review

Infrastructure has been described as the “bedrock for development in any country” (Agyekum et al., 2019, p87). Infrastructure works include the structures and assets that enable a society to function including those pertaining to engineering, construction, transport, and energy works. In the UK, the engineering, infrastructure, and construction industry contributed £117 billion to the economy, accounting for 6.1% of the total and representing 6.6% of total employment with over 2.4 million jobs (Rhodes, 2019). Investment in infrastructure is linked to economic advancement and indirect benefits including reducing trade and transactional costs, and increasing production, productivity, and employment (Adelekan et al., 2013). Ultimately, investment in infrastructure reduces poverty and spurs economic growth (Agyekum et al., 2019). In the UK, government data shows that the contribution of the engineering, infrastructure and construction industry to the UK economy has increased year on year from 2009 - 2018, both as a percentage of economic activity (from 5.6% to 6.1%) and in financial terms (£80 billion to £117 billion) (Rhodes, 2019).

Investing the required amount of funds into infrastructure so that development levels meet demand can prove overwhelming for many countries and governments. This inevitably leads to finance levels being described as inadequate and situations arising where those who do invest, seek to maximise the benefit such investments achieve and minimise any associated risks (Adelekan et al., 2013). As part of drives to maximise the benefits achieved from infrastructure investment, infrastructure clients are increasingly seeking to create and deliver Social Value for the stakeholders involved. Indeed, Highways England commissioned research with the specific intent to consider how Social Value could be enhanced on its projects for the benefit of all stakeholders (Daniel and Pasquire, 2017).

As engineering works are described as a critical part of national infrastructure (Aldhaheri et al., 2018). in that they allow people to live, travel, and work safely and comfortably, it could be

122 argued the very nature of the industry creates and delivers Social Value through the end results
123 produced. However, despite this argument, for the past half a century there has been an
124 increasing focus on the Corporate Social Responsibility (CSR) of organisations operating in the
125 engineering, infrastructure, and construction industry (Barthorpe, 2010). The concept of CSR is
126 one that incorporates an organisation's economic, legal, ethical, and philanthropic
127 responsibilities (Carroll, 1999). Whilst legal compliance can perhaps be more easily evidenced,
128 the target(s) of economic, ethical and philanthropic activity can be harder to determine, but are
129 often viewed in regards to an organisation's triple bottom line; how they report on their
130 economic, environmental and social impacts (Lunenberg et al., 2016). Within the construction
131 industry CSR has been described as the consideration organisation's give to the impacts of their
132 operations upon society and the environment (Barthorpe, 2010). Whilst there have been
133 arguments the industry was behind others in how organisations operating within it adopted CSR
134 practices (Glass, 2012), there can be no argument that CSR is not being increasingly focussed
135 upon by engineering, infrastructure and construction organisations. The KPMG 'Survey of
136 Corporate Responsibility Reporting 2017' (KPMG, 2017) revealed 69% of construction
137 companies reported on CSR in 2017, up from 32% in 2008 (KPMG, 2011).
138
139 When discussing and embracing the concept of CSR, organisations generally have historically
140 tended to focus upon the environmental and economic aspects (Carroll, 2015). One possible
141 explanation for this is that economic and environmental factors can be more easily measured
142 and expressed in numerical terms. For example, currency is used to measure economic
143 performance, and environmental impacts can be measured and communicated in tonnes of
144 CO2, number of trees planted and as percentages of recycled materials used. Social value on
145 the other hand has often proved difficult to measure and so has tended not to be focussed upon
146 by organisations until fairly recently (Watts et al., 2019). However, there has been a drive over
147 the past few years for organisations to have a greater focus on the social value aspects of CSR,
148 notably with the introduction of the Public Services (Social Value) Act (2012).
149
150 Starting life as a Private Members Bill the Social Value Act gained Royal Assent in 2012 and
151 compels public sector bodies to consider the additional social value that can be achieved

through their procurement activities. Traditionally engineering, infrastructure and construction works were awarded on the iron triangle of criteria: cost, time, and quality (Wong et al., 2012). The Social Value Act (2012) sought to encourage a shift away from this iron triangle to include social value as a fourth criteria on which to judge returned tenders. Social value can be broadly described as a concept that is actionable which adds benefit to society (Kuratko et al., 2017). Examples can include organisations purchasing only fair-trade products, requesting employment opportunities be created with all goods and services procured, and a focus on recruiting from disadvantaged and marginalised groups in society (Loosemore, 2016). However, it is in defining social value that problems with its delivery are revealed. It is argued that social value is a heavily subjective concept with different stakeholders each potentially holding a different fixed interpretation, with such variability between stakeholders fuelling the concepts subjective nature (Loosemore and Higgon, 2016). Therefore, when these stakeholders attempt to reach an agreement over its meaning, problems arise. This can include trying to determine exactly what initiatives efforts should be focused upon and agreeing when targets have actually been achieved. Even in circumstances where an agreement over a definition is reached between stakeholders as to what Social Value pertains to, measuring this Social Value can again prove difficult (Watts et al., 2019).

Ensuring the social value envisaged and agreed during procurement is then delivered during the project works has also proven to be difficult (Loosemore, 2016). This can be the result of internal communication challenges with the strategies set at management level not the strategies delivered at operational level (Watts et al., 2015). It can also be the result of communication breakdown between stakeholders due to the subjective and ambiguous nature of Social value (Loosemore and Higgon, 2016). Somewhat irrespective of the difficulties in agreeing, delivering and measuring Social Value, it is now an expectation in the procurement of many public sector projects, and so a failure to engage with social value could ultimately result in a failure to win work (Loosemore, 2016). Whilst many studies have evidenced the rising importance of Social Value in construction procurement (Watts et al.,2016), it is also a growing expectation in the procurement of infrastructure and engineering works. However, delivering Social Value is a relatively recent expectation in engineering projects, with limited studies

evidencing how social value is achieved, and the impact it has, in projects such as gas infrastructure works (Daniel and Pasquire, 2017). This is surprising given the impact and extent gas infrastructure works have on the UK and therefore the potential for the positive impacts generated from an increased focus on Social Value. Understanding how to maximise social value benefit in infrastructure is especially important given the significant investment in infrastructure planned (Dobson, 2020). It is important however, to clearly distinguish between the Social Value that arises from infrastructure works being undertaken and the 'additional' Social Value that can be created by the project teams involved in the delivery of the works as a result of their decisions and actions. Therefore, infrastructure works need to focus on additional social value creation now more than ever to help rebuild economies in the face of socio-economic challenges and the Covid-19 pandemic (Dobson, 2020). Covid-19 is a respiratory illness that was first detected in 2019 and quickly spread around the world leading to the UK, amongst many countries, to impose a lockdown that restricted the population from any unnecessary travel and prevent many industries from operating (Watts, 2020). Whilst the UK construction industry was one of the first industries to be allowed to resume operations, the results of the wider lockdown served to plunge the UK into its first recession in over a decade and reduce economic output by over 20% (Watts, 2020).

At present, however, there is no consistent and widespread methodology for the successful delivery of Social Value outcomes in infrastructure works. This is leaving infrastructure projects at a disadvantage, as engineering professionals are expected to create and deliver Social Value with limited research backed guidance on how to do so effectively. Although this guidance is growing with the release of the report 'Maximising Social Value from Infrastructure Projects' (Dobson, 2020), it is still in its infancy when compared to the body of Social Value research that is primarily construction project focused. However, one study that compared some of the existing construction focused Social Value literature, guidance documents, and measurement tool attempts found that these often serve to confuse and restrict the development of Social Value due to their conflicting and ambiguous nature (Watts et al., 2019).

This research is positioned at an underrepresented cross section in the literature of Social Value creation, UK based energy infrastructure and individual gas projects that form part of a wider nationally significant network. Smaller gas projects, that are of high significance to the UK economy, but of low individual value when compared to national and international gas projects are often overlooked in research with a paucity of papers focussing upon the importance of these projects. Where gas and infrastructure research is conducted it is often with a focus on the international markets (see Aldhaheri et al., 2018). When a more nuanced national perspective is adopted this is often with a focus on developing countries (see Kassem et al., 2020). Previously when Social Value and infrastructure delivery were discussed, it was often the societal benefit that derives from use of the actual infrastructure asset itself that was focused upon. The additional Social Value created during the completion of the infrastructure project by the construction professionals involved was often not considered in great detail. Recent research has started to build in this area (see Dobson, 2020) but there remains a gap in current research this paper seeks to address and explore with the aim of understanding how Social Value is currently generated and delivered on national and regional UK gas infrastructure projects.

## 3. Methods

Social Value is often considered a subjective concept as it allows different interpretations to exist across numerous stakeholders simultaneously (Watts et al., 2019). This social construction of meanings determines that a constructivist ontological perspective is adopted which ultimately dictates a qualitative research design (Bryman, 2016). As this research asks ‘how’ a contemporary issue is addressed and is concerned with witnessing and not controlling real world behaviours within a particular context, Yin (2018) proposes that case study as a research method will be suitable (Yin, 2018, p9). A case study allows for a detailed and intensive investigation to occur over a period of time and is a widely used research method in the areas of business and management (Bell et al., 2019). Case Studies can be effectively used to gain qualitative data for inductive research (Walliman, 2016).

For this paper a multiple case study approach was adopted where five small community-based gas infrastructure projects, that were part of a wider nationally significant network, were analysed in 2019. Each of the case studies were similar in scope in that they were a project that involved the cleaning of existing gas pipes and assets with grit blast, painting of the newly cleaned gas pipes and assets, where the condition of pipes were assets were deemed beyond repair they were removed, and newly fabricated pipes installed in their place. Remedial works at each of the sites including installing security bollards, gates and fencing, as well as tarmac and paving works and installation of new doors and roofs on housing units. The details of the five projects can be found in Table 1.0.

[INSERT TABLE 1.0 HERE]

All projects had been recently completed at the time the research was conducted and so the social value aspects of the procurement documents issued to the contractor were also analysed, as well as the social value related tender documents returned, social value related extracts of signed contract documents and a complete set of meeting minutes for each project. A thematic analysis was then conducted of all documents. A thematic analysis is an analytical process of interpreting qualitative data through the use of identifying themes explored in the data before categorising and comparing these themes through the process of allocating codes (Grey, 2018). From the thematic analysis all applicable content was coded, and then the content of each code grouped under appropriate category headings. The codes used at both stages were those that emerged from the analysis and allowed a comparison to take place across all five projects to identify any key themes, as well as any similarities and differences in social value expectations, creation, delivery and success. Examples of the codes that emerged include ‘Social Value Perceptions’, ‘Decisions Made’, ‘Project Success’, and ‘Social Value Actions’,

For each of the projects, separate interviews were then conducted with the client’s Project Manager (PM) and Quantity Surveyor (QS) as well as the contractor’s PM and QS. Twelve interviews were conducted in total as where the teams were involved in multiple projects their views were ascertained on all projects as part of the same interview. All interviews were

conducted via phone and lasted between 30 and 60 minutes. Notes were taken during the interviews of all answers as it was felt phone recording may be off-putting to those professionals who have not experienced recorded interviews previously. Questions asked included 'How would you describe Social Value?', 'Can you describe the Social Value delivered on the project?', 'Were you happy with the amount of Social Value created?', and 'Who do you think is best placed to decide upon the Social Value to be delivered?'. A process of narrative analysis was then undertaken to structure the interviews questions and used as a method of. Narrative analysis is a process whereby information is requested and discussed in the form of stories to allow a deep insight into an individual's perceptions ad interpretations (Sandelowski, 1991). For example, when the question was asked 'Can you describe the Social Value delivered on the project?' the PM from Contractor Y replied "…On [Project 5] we actually achieved a lot in the end…with the trees we planted around the perimeter of the site, the clean-up of the local woodland, and primary school talk we gave…".

This helped reveal the perceptions of social value held by those members of the project team that were interviewed. The results of the narrative analysis were then manually grouped by the researchers into key themes and headings that emerged during the interviews. This included the perceptions of the successes, failures, barriers, and activities of social value for each of the projects relating to any tensions, delivery issues, communications, and actions each professional experienced. The results of the narrative analysis were then contrasted and compared with the results of the thematic analysis, so a richer more detailed picture of social value could emerge from each of the case study projects, and key lessons could be extracted as to how social value can be effectively delivered in gas infrastructure works.

## 4. Results and Discussion

Analysis of the results found that the engineering professionals interviewed perceived their actions created additional Social Value, and that Social Value is a concept that is actionable and adds benefits to society, reinforcing definitions provided in the literature (Kuratko et al., 2017). The professionals interviewed believed it was their choices and decisions made whilst delivering

gas infrastructure projects that impact upon the amount of Social Value generated. Whilst the interview results did reveal Social Value is a subjective concept, reinforcing findings in the literature (Loosemore and Higgon, 2016), they also build upon existing findings that clients are seeking to maximise Social Value benefits for infrastructure stakeholders (Daniel and Pasquire, 2017). There was also a broad consensus across all interviewees regarding the specific challenges gas infrastructure projects pose to the creation of additional Social Value. Whilst all those interviewed espoused the resulting benefits from the completion of their respective projects, the all described the process of creating 'additional' Social Value as often difficult given the overall short duration of each project, specialist and high risk nature of the works, and often the relatively low project values restricting additional budgetary spend. It was reported that many Social Value initiatives considered were deemed unsuitable for their projects based on these points. This included offering work experience opportunities and creating longer term jobs via apprenticeship positions, both of which were described as 'common' by some interviewees amongst wider stakeholder expectations when it came to delivery Social Value.

The results also indicate that if all engineering professionals involved with the project delivery have similar Social Value perceptions, then all professionals believe more social value will be created during the works, and all were more likely to be satisfied with the effectiveness of the social value delivered and judge the social value creation and delivery to be a 'success'. However, if the engineering professionals involved had different interpretations of Social Value, or where the responsibility for social value rested, then the professionals were more likely to report feelings of being unsatisfied with the amount and type of social value created. This manifested itself as an increase in the tension that exists at the heart of the social value concept. The consensus amongst all those interviewed was that the clearer the social value responsibility agreed at tender stage, the better the delivered outcomes were during the infrastructure works themselves. However, analysis and comparison of all the collected data revealed that the professionals involved with the project delivery often had differing interpretations of where the ultimate responsibility for the delivery of social value rested. For Projects 1 and 3 the client PM's and QS's all believed that the detail of the social value to be created was best led by the contractor's team as they were the ones with responsibility for the

social value delivery. However, in these cases the contractor team's (for contractors X and Y) disagreed and believed all social value initiatives were best led by the client's team, as they had ultimate accountability for the project and defined the scope of works required. In these cases, those involved reported an increase in the tensions felt around social value and that the projects had a lack of direction around the types of social value to be created and how it should be delivered. Such tensions and perceived lack of project direction were arguably due to the conflicting understandings around the ultimate responsibility for social value delivery,

Conversely, both the client and contractor professionals involved in projects 4 and 5 all agreed that the ultimate responsibility for determining what sort of social value should be created and how it should be created rested with the client's project team, but that as the contractors team would be the ones delivering to the social value targets, all decisions should be jointly agreed. This was evidenced in their tender documents which had clear, yet somewhat incomplete, information pertaining to the social value expectations and requirements of the project. However, in these cases the social value created and delivered was described in much more effective terms with very little tensions reported from either the client or contractor team. Interestingly, project 5 (where social value was described as effective and tension free) and project 3 (where social value tensions were reported), both had contractor Y on site. When this was discussed with the contractor it became apparent that the contractor believed if leadership was taken by the client when it came to social value creation, the contractor felt more able to direct their resources at the social value requirements and ensure effective social value was created and delivered, and this was confirmed in their behaviours on project 5.

The findings also revealed that effective social value creation and delivery was reported by both the client and contractor team's when this consensus of responsibility existed, even if the consensus was that the responsibility to create and deliver social value rested with the contractor. In project 2, it was agreed between both the client and contractor team that the contractor was best placed to create and deliver social value. This is the opposite approach taken in projects 4 and 5 where it was agreed the client was best placed to manage the social value, yet the same effective social value was reported. All professionals interviewed from

project 2 agreed that knowing who was responsible for the social value creation and delivery allowed all parties to have a greater focus on the social value requirements which ultimately resulted in the perceptions of a more effective delivery of social value. It appears a consensus of opinion over who has ultimate control over social value delivery is a method of ensuring effective social value creation, as when there is confusion and misconceptions amongst the contractor and client, a barrier to effective social value delivery is created. This resonates and builds upon earlier literature findings that management communication challenges can reduce the effectiveness of Social Value strategies being delivered at project level (Watts et al., 2015).

Building upon this further, the results revealed that, even if a consensus is reached amongst all parties, another barrier to effective social value delivery that emerged in the interviews amongst all contractors was the result of a lack of clarity of social value requirements at tender stage by the client. Even if it is the contractor who will have ultimate responsibility for the delivery of the Social Value initiatives, and all parties are agreed on this, the client will still be instrumental in ensuring the social value delivery is efficient and effective by ensuring any and all requirements are clearly set out when the contractor is first engaged. This was described as a lack of leadership direction that can create a barrier in the delivery of social value by limiting the autonomy of the contractor. In such circumstances the contractor professionals have reported as being unaware of the parameters within which they can operative when it comes to social value. This uncertainty impacts the Social Value strategies made by the contractor as they are often unsure of the client requirements and project expectations, and so therefore a barrier around effective social value is created limiting the benefits that can be delivered. An example of this from contractor Y, who discussed successful Social Value creation and delivery in project 5 where the clients team took leadership over the social value requirements but left the contractor to deliver it. Yet in project 3 where the client put all requirements on the contractor to lead, create and deliver the required social value, the contractor was unsure at the start of the project exactly what social value expectation and requirements the client had. Despite examples such as local spend and creation of apprenticeship positions being inserted in the contract, questions remained which led to delays in enacting some social value activities and other

activities not going for enough to ultimately meet the clients expectations which were only clearly revealed in meeting minutes towards the end of the project.

Finally, the interviews revealed that all social value requirements were ultimately viewed as a 'bolt on' to the requirements of the project, and that even though they did form part of the tender requirements, they played a minimal role in contractor selection, and no immediate action was taken if the contractual requirements were not met by the contractor. The enforcement of social value requirements was therefore non-existent during the project once the contract was signed and the project commenced. This could be accounted for by the literature arguments that Social Value in infrastructure and engineering is a relatively recent requirement (Daniel and Pasquire, 2017) and so all parties are still perhaps getting used to the increased expectations and requirements. A review of the contract documents revealed that all social value initiatives were associated with KPI's, but these KPI's were not listed on the respective Activity Schedule's and so therefore did not influence whether the projects could be signed off as complete and whether full payment for works could be made. A general consensus amongst the client PM's and QS's was that whilst social value was important, they were directed to include and achieve it by their own management teams, but as they had little enforcement over its compliance they felt somewhat 'toothless' when it came to ensuring the social value was achieved. In projects 2, 4 and 5 where more effective social value was reported, the clients PM and QS's all reported feeling more in control of the social value delivery and ensuring the compliance of the contractor, despite the fact in project 2 all the engineering professionals involved agreed the contractor had control over the direction of the social value creation and delivery. The interviews with all client PM's and QS's did reveal that although no imminent enforcement measures could be taken during the projects for any social value KPI's, these all formed part of a wider performance review and so would be considered by the clients when awarding future projects. However, the consensus amongst all contractor PM's and QS's, regardless of if the social value on their project was judged effective or not, was that even if they failed to deliver the social value expected, it would not be used in any future contract considerations as the ultimate award criteria remains time and cost.

Figure 1.0 is a visual representation of the findings, illustrating how barriers to effective social value delivery on small gas infrastructure works can be avoided by the actions of the client and contractor.

[INSERT FIGURE 1.0 HERE]

## 5. Conclusions

There are arguments that engineering, infrastructure and construction projects create social value through their very delivery as they provide a tangible benefit to society (Daniel and Pasquire 2017). Despite this, the creation and delivery of additional social value through the actions of the client and project teams is increasingly expected by stakeholders. However, there is a gap in existing literature around how such social value can be effectively created and delivered in small gas projects, and the barriers construction professionals are faced with when attempting to deliver social value. The aim of this research was to address this gap and help understand how social value can be successfully created and delivered in gas infrastructure works. Case studies of five projects with differing clients and contractors were examined, consisting of interviews with both client and project staff and a review of all applicable contract and project documentation.

The results revealed that some common Social Value initiatives are unsuitable for gas infrastructure projects due to their high risk nature, relatively short programme durations and low project values. The results also revealed that a failure of clients to ensure suitable mechanisms are in place to monitor and enforce Social Value can lead to barriers in effective Social Value delivery. A failure in client leadership of outlining the remit, parameters and expectations of Social Value can also lead to the creation of barriers preventing effective Social value delivery, and therefore clients should understand their responsibility at early stages of projects to ensure barriers are minimised and Social Value can be effectively delivered. Finally, the results of this research built upon existing literature and revealed that it is alignments between clients and contractors in their Social Value understandings around the ultimate responsibility for Social

Value delivery that are key. It is somewhat regardless of where this ultimate responsibly lies, either with the client or contractor, but it is of the upmost importance that both parties agree to who will be creating and delivering Social Value that is key to successful Social Value creation and delivery in gas infrastructure works given the unique challenges and barriers such works face. These findings seek to serve as important lessons for clients and contractors seeking to maximise Social Value during the completion of their projects.

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